UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/526,771	03/08/2005	Rikuo Onishi	HEIW:046	5849

7590 01/05/2007

Charles A. Wendel
Steptoe & Johnson LLP
1330 Connecicut Avenue N.W.
Washington, DC 20036

EXAMINER	
WU, IVES J	
ART UNIT	PAPER NUMBER
1724	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/05/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/526,771	ONISHI ET AL.	
	Examiner	Art Unit	
	Ives Wu	1724	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 October 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9 and 19-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,19-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

(1). Applicants' Request-for-Continued Examination (RCEX), Amendments and Remarks filed on October 16, 2006 have been received.

Claims 1, 4, 8, 9, 19 and 21 are amended. Claim 22 is newly added.

Claims 10-18 are cancelled.

An Office Action is presented in response to the RCEX, Amendments herein.

Claim Rejections - 35 USC § 102/103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

(2). **Claims 1-3** are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Diana et al (US005936041A).

As to modified polypropylene based polymer obtained by modifying at least one propylene based polymer selected from the group consisting of a propylene homopolymer, a random copolymer of propylene and α-olefin, a block copolymer of propylene and α-olefin, and

a graft copolymer of propylene and α-olefin, with a radical initiator, and a compound containing in the same molecule an ethylenic double bond and a polar group in **independent claim 1**, Diana et al (US005936041A) disclose a functionalized, fractionated polymer prepared by functionalizing the fractionated polymer to contain mono- or dicarboxylic acid producing groups selected from the group consisting of a mono-unsaturated monocarboxylic acid producing compound and a mono-unsaturated dicarboxylic acid producing compound (Col. 5, line 3-5, line 10-13). Preferred polymers are polymers of ethylene and at least one α-olefin having the formula $H_2C=CHR^4$ wherein R^4 is straight chain or branched chain alkyl radical comprising 1 to 18 carbon atoms. Therefore, the useful comonomers with ethylene include propylene. Preferred polymers are copolymer of ethylene and propylene (Col. 9, line 20-32). Another preferred class of polymers is α-olefin polymers; Isotactic and atactic polypropylenes are also useful examples of α-olefin polymers (Col. 10, line 24-25).

As to Molecular Weight Distribution (Mw/Mn) to be more than 2.5 in **independent claim 1**, Diana et al disclose MWD of from about 1.2 to 3 (Col. 4, line 65-66).

As to the intrinsic viscosity measured at 135 °C in tetralin to be from 0.8 to 3.0 dl/g in **independent claim 1**, Diana et al disclose the polymers possessing generally an intrinsic viscosity (as measured in tetralin at 135 °C) of between 0.025 and 0.6 dl/g, when grafted, they are essentially amorphous (Col. 9, line 51-56). The intrinsic viscosity would increase after the grafting with unsaturated carboxylic acid because the additional polar functional group. Therefore, it is examiner's position to believe that the functionalized polymers of Diana et al (identical to modified propylene based polymer of applicants) would inherently possess the intrinsic viscosity range as claimed. Since USPTO does not have proper means to conduct the measurements, the burden now is shifted to applicants' to prove otherwise. *In re Fitzgerald*, 205 USPQ 594 (CCPA 1980).

As to content of polar moiety to be from 0.10 to 0.30 mmol/g and content of components with Mw of 10,000 or less being 5% wt or less in **independent claim 1**, in view of substantially identical modified α-olefin based (such as propylene) polymers disclosed by Diana et al, and by applicants, it is examiner's position to believe that the functionalized polymers of Diana et al would inherently possess the ranges for polar group moieties content, and content of components with Mw of 10,000 or less as claimed. Since USPTO does not have proper means to conduct the

measurements, the burden now is shifted to applicants' to prove otherwise. *In re Fitzgerald*, 205 USPQ 594 (CCPA 1980).

As to ratio of intrinsic viscosity in **claim 2**, in view of substantially identical propylene based polymer and modified polymer disclosed by Diana et al, and by applicants, it is examiner's position to believe that the functionalized polymers of Diana et al would inherently possess the intrinsic viscosity ratio as claimed. Since USPTO does not have proper means to conduct the measurements, the burden now is shifted to applicants' to prove otherwise. *In re Fitzgerald*, 205 USPQ 594 (CCPA 1980).

As to limitation of **claim 3**, Diana et al disclose the carboxylic reactant selected from the group consisting of a mono-unsaturated monocarboxylic acid producing compound and a mono-unsaturated dicarboxylic acid producing compound (Col. 5, line 10-13).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

(3). **Claim 4** is rejected under 35 U.S.C. 103(a) as being unpatentable over Diana et al (US005936041A) in view of Coe (WO 01/36495A1).

As to process of melting, kneading to blend at temperature of not lower than the melting point of propylene based polymer and 180 °C or less in claim 4, Diana et al disclose the Koch reaction for the functionalization (Col. 5,line 6). Diana et al do not teach the melt blending process for the functionalization.

However, Coe (WO01/36495A1) **teaches** the melting ethylene homopolymer and/or interpolymers at a temperature at least 175 °C (page 6, line 24-28), when utilized, a functionalizing agent may be introduced into the melting zone (page 7, line 3-5). Examples of suitable functionalizing agents herein are carboxylic acids such as acrylic and methacrylic acid (page 9, line 3-4).

The advantage of melt blending process of functionalization is to have reduced melt index ratio and reduced Mw (Abstract) functionalized interpolymer useful in many applications, such as, for example, in blown film, cast film, extrusion coating, injection molding, adhesive and sealant raw materials, and the like (page 1, line 14-18).

Therefore, it would have been obvious at time of the invention to replace the functionalization process (koch reaction) disclosed by Diana et al with the melt blending process for functionalization of polyolefin (such as polypropylene or interpolymer) disclosed by Coe in order to obtain the above-mentioned advantage.

(4). **Claims 5-9, 19-22** are rejected under 35 U.S.C. 103(a) as being unpatentable over Diana et al (US005936041A) in view of Ueno et al (US004983647).

As to component (B) in a polyolefin resin composition in **claims 5, 6** and **7**, the disclosure of Diana et al is incorporated herein by reference, the most subject matter as claimed has been recited in applicants' claims 1 and 2, and has been discussed therein.

As to components A, C and D in a polyolefin resin composition in **claims 5, 6, 7** and **19**, Diana et al **do not teach** the polyolefin resin composition comprising components A,C and D.

However, Ueno et al (US004983647) **teach** the resin composition comprising a mixture of modified polyolefin obtained by introducing a carboxyl group into a polypropylene and unmodified polypropylene, mica and ethylene-propylene copolymer rubber (Abstract). It is well known in the art that mica is smectite lamellar clay mineral.

The advantage of this polypropylene composition is capability of providing molded articles of very low warpage and is useful for production of molded articles, particularly core materials of instrument panels for automobiles requiring high rigidity, high heat resistance and deformation resistance (Abstract).

Therefore, it would have been obvious at time of the invention to formulate the resin composition of Ueno et al including modified propylene of Diana et al in order to obtain the above-mentioned advantage.

As to limitation of **claims 8, 20**, Ueno et al disclose the unmodified polypropylene in the mixture (Abstract). As an unmodified polypropylene being a crystalline ethylene-propylene block copolymer has an ethylene content of 2-30 wt% (Col. 2, line 48-51). Ueno et al disclosed the crystalline ethylene-propylene block copolymer having MFR of 15 g/10 min and an ethylene content of 7.5 wt% (hereinafter this copolymer is abbreviated to unmodified PP) in Example 10.

As to limitation of **claims 9, 21**, Ueno et al disclose the resulting mixture to be fed into a double-screw extruder having two feed openings. These components were melt kneaded and extruded at 240-260 °C to obtain pellets in Example 1.

As to limitation of **claim 22**, the disclosure of Diana et al, Ueno et al is incorporated herein by reference, the most subject matters of components A,B,C and D as claimed have been recited in applicants' claim19, and have been discussed therein.
Ueno et al disclose various additives such as antioxidant, ultraviolet absorber, antistatic agent, heat stabilizer, nucleating agent, pigment and the like (Col. 5, line 1-4).

Response to Arguments

Applicant's arguments with respect to claims 1-21 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ives Wu whose telephone number is 571-272-4245. The examiner can normally be reached on 8:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Examiner: Ives Wu
Art Unit: 1724
Date: December 28, 2006

DUANE SMITH
PRIMARY EXAMINER

D.S
1-3-07